ECONOMIC CLASSIFICATION SYSTEMS FOR TRANSPORTATION

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Classification systems affect the collection, comparability, and aggregation of statistics available to transportation analysts. Although many classification systems exist, and have some bearing on transportation, three economic classification systems in particular affect transportation:

- The North American Industry Classification System (NAICS) identifies establishments by the major goods or services they produce. NAICS replaces the Standard Industrial Classification (SIC) System, and has been developed as a statistical standard by the United States, Canada, and Mexico. NAICS affects the sample frames used by the Bureau of the Census for its economic censuses and surveys, including the Commodity Flow Survey, which in turn affects data availability. NAICS also affects the way in which the Bureau of Economic Analysis, Bureau of Labor Statistics, and other government agencies, define transportation as a part of the economy.
- The Standard Classification of Transported Goods (SCTG) identifies types of freight reported by respondents to the 1997 Commodity Flow Survey (CFS). The SCTG will be used in place of the Standard Transportation Commodity Classification (STCC) system, which was used in the 1993 CFS. Canada participated in the development of the SCTG.
- The Standard Occupational Classification (SOC) identifies jobs used in statistics on the labor force, employment income, occupational safety, and commuting. The SOC is now nearing revision, updating the last revision done in 1980.

The Bureau of Transportation Statistics (BTS) of the U.S. Department of Transportation played an active role in the development of all three classification systems as part of the Bureau's mandate to improve the quality and comparability of transportation statistics. BTS is also involved in land use classification and related activities through the Federal Geographic Data Committee. This report summarizes the work done by the Volpe National Transportation Systems Center under the direction of BTS to design and implement the NAICS, SCTG, and the SOC.

NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM

The North American Industry Classification System (NAICS) is the economic classification system developed to replace the current 1987 Standard Industrial Classification (SIC) System. NAICS is a system for classifying establishments by type of economic activity, emphasizing a production-oriented approach to classification. NAICS purposes include: (1) facilitating the collection, tabulation, presentation, and analyses of data relating to establishments; and (2) promoting uniformity and comparability in the presentation of statistical data describing the economy.

NAICS will allow for common industry definitions between the United States, Canada, and Mexico. It will also provide for better economic statistics among the three countries.

NAICS is particularly important to the transportation community for two reasons. First, transportation agencies must account for a growing number of economic factors in forecasting future demand for transportation and in analyzing the economic consequences of transportation policies. Both demand and consequences are being affected by shifts in activity among different sectors of the economy, by the geographical redistribution of economic activity among regions, and by the growing influence of international trade on domestic commodity flows. Second, the transportation community is increasingly dependent on surveys by the Bureau of the Census and other agencies that will be based on NAICS. (These surveys are currently based on SIC.) The CFS and the Truck Inventory and Use Surveys are prominent examples.

Background

The SIC system was developed in the 1930's, and was updated every 5 to 15 years through 1987. The basic structure of the SIC system had not been altered for decades, and the SIC system was criticized in the 1980s for no longer reflecting the economy's composition. The Office of Management and Budget (OMB) established an Economic Classification Policy Committee (ECPC) of the major statistical agencies to conduct a "fresh slate" examination of the SIC and to determine the desirability of a new economic classification system based on a single economic concept. A series of Federal Register notices were published seeking public comment on the revision process and proposed industries and an International Conference on Economic Classification, was held in 1991 in Williamsburg, Virginia.

Following the conference, ECPC began to develop NAICS in conjunction with Statistics Canada and the National Institute of Statistics, Geography and Informatics (INEGI) in Mexico. ECPC attempted to organize business establishments consistently by the methods of production they used to create products and services, replacing the classification of some establishments by what they produced and others by the market they served in the SIC.

BTS supported the efforts to develop a more consistent, up-to-date system that was comparable across countries, but expressed concerns with the ECPC's proposed adherence to a "production-based" classification system since much transportation activity was organized around the markets served rather than an abstract method of producing transportation services. After numerous discussions, ECPC found ways to accommodate most of the Bureau's concerns.

NAICS is scheduled to be implemented for data collected by the United States and Canada for 1997, and a year later for Mexico.

NAICS Structure

The former SIC, which was intended solely for U.S. statistics, used a hierarchical four-digit coding system. NAICS is organized in a hierarchical structure, with a six digit coding system. The first two digits are used to designate the industry sector. The third, fourth, fifth, and sixth digits, designate respectively, the subsector, industry group, industry, and national detail (if any). The six digit national detail allows for each country to add detailed industries below the proposed five digit industry level of NAICS, in order to meet national needs. The national detail must aggregate to the five digit level in order to ensure full compatibility among the industries.

Digits	Classification Unit	Example
XX	Industry Sector	48-49, Transportation and Warehousing
XXX	Industry Subsector	481, Air Transportation
XXXX	Industry Group	4811, Scheduled Air Transportation
XXXXX	NAICS Industry	48111, Scheduled Air Transportation
XXXXXX	U.S. Detail (if any)	481111, Scheduled Passenger Air Transportation 481112, Scheduled Freight Air Transportation

For-hire transportation services are covered by Sector 48-49, Transportation and Warehousing. The Transportation and Warehousing sector provides a subsector for each mode of transportation, a subsector for establishments providing support activities for transportation, and a subsector for warehousing and storage. In addition, there are subsectors for establishments providing passenger transportation for scenic and sightseeing purposes; postal service; and couriers and messengers. The subsectors include:

481: Air Transportation
482: Rail Transportation
483: Water Transportation

484: Truck Transportation
485: Transit and Ground Passenger Transportation
486: Pipeline Transportation
487: Scenic and Sightseeing Transportation
488: Support Activities for Transportation
491: Postal Service
492: Couriers and Messengers
493: Warehousing and Storage

In addition to a new numbering system, the NAICS structure causes the following changes to the 1987 SIC as outlined in the Federal Register notices of May 28, 1997 and November 5, 1997:

- **Subsector 481, Air Transportation**: The classification distinction is based on the scheduled air transportation versus nonscheduled air transportation. Scheduled air transportation is further delineated between passenger and freight transportation. Nonscheduled air transportation is further split between passenger, freight and specialty services.
- **Subsector 484, Truck Transportation**: The subsector has been separated into general freight trucking and specialized freight trucking. General freight trucking is further split between local and long distance. Specialized freight trucking includes industries for used household and office goods moving and industries for specialized freight trucking (except used goods) local and long distance. This is a change from the 1987 SIC 4212, Local Trucking Without Storage, and 1987 SIC_4213, Trucking, Except Local, which included storage as a criteria in the classifications.
- **Subsector 485, Transit and Ground Passenger Transportation**: The subsector's principal delineation is based on whether the transportation was scheduled versus nonscheduled. This subsector includes commuter transportation and highway based passenger transportation. The School and Employee Bus Transportation Industry was revised from 1987 SIC 4151, School Buses, to include the employee transport that was included in 1987 SIC 4119, Local Passenger Transportation, NEC. The Charter Bus Industry combines the local and long distance industries in the existing classification system (1987 SIC 4141, Local Bus Charter Service and 1987 SIC 4142, Bus Charter Service, Except Local).

Subsector 487, Scenic and Sightseeing Transportation is separated into three industries based on the mode - land, water, and other.

- **Subsector 488, Support Activities for Transportation** includes support services specific to each mode of transportation, and to multimodal activities of freight transportation arrangement, storage facilities and other support activities for transportation. (The 1987 SIC had classified support activities in the same major group as the mode serviced.) The Support Activities for Rail Transportation have been revised to include all of the services to the rail industry currently included in

1987 SIC 4013, Railroad Switching and Terminal Establishments; 1987 SIC 4741 Rental of Railroad Cars; and 1987 SIC 4789 Transportation Services, NEC.

Auxiliaries: Auxiliary establishments are establishments that primarily produce support services not intended for use for use outside the enterprise. The NAICS system will classify auxiliary establishments based on their primary activity, which is consistent with the NAICS principle of classifying the establishment according to its primary activity, not the establishment that they serve. This represents a major change from how auxiliaries were treated under the SIC, and will likely affect tabulations of time series data for some industries.

NAICS moves several types of establishments into the Transportation Subsectors:

- **Subsector 487, Scenic and Sightseeing Transportation** now includes part of 1987 SIC 7999, Amusement and Recreation Services, NEC. The parts included are aerial tramways, scenic and amusement; scenic transport operations, land; and charter fishing.
- **Subsector 488, Support Activities for Transportation** now includes government air traffic control currently classified in 1987 SIC 9621, Regulation and Administration of Transportation Programs. Additional activities that have moved into this subsector include ship scaling (1987 SIC 7699, Repair Shops and Related Services, NEC) and towing (1987 SIC 7549, Automotive Services, Except Repair and Carwashes).
- **Subsector 491, Postal Couriers**, now includes post office contract stations currently classified in 1987 SIC 7389, Business Services, NEC.

NAICS moves several types of establishments out of the Transportation Subsectors:

- Air ambulance transportation currently classified in 1987 SIC 4522, Air Transportation, is now classified to Sector 62, Health Care and Social Assistance.
- Marina establishments currently classified in 1987 SIC 4493, Marinas, are now included in Subsector 713, Amusement, Gambling, and Recreation Industries.
- Collection of refuse and garbage, currently classified in 1987 SIC 4212, Trucking, Except Local is now included in Subsector 562, Waste Management and Remediation Services.
- Ambulance services, road currently classified in 1987 SIC 4119, Local Passenger Transportation, NEC are now classified in Sector 62, Health Care and Social Assistance.
- Travel agents and tour operators, currently classified in 1987 SIC 4724, Travel Agencies, and 1987 SIC 4725, Tour Operators, are now classified in Subsector 561, Administrative and Support Services.

It is important to note the definition of transportation may be defined in different ways, from a very narrow to very broad set of activities, products and services. NAICS is based on a production based economic concept. Industries have been grouped according to the production concept. NAICS is based on the classification concept of

what activity an establishment is "primarily engaged in". This is generally interpreted to mean 50 percent or more of an establishments total economic activity, as measured by a particular method.

Sector 48-49, Transportation and Warehousing generally include those establishments primarily engaged in providing transportation of passengers and cargo in all mode categories, scenic and sightseeing transportation, support activities relating to modes of transportation, and warehousing and storage for goods.

In the forthcoming NAICS manual, it is important to note that transportation related activities are found in a variety of sectors. The transportation aspect of the activities noted below are not the primary activity of the establishment and are, therefore, classified outside of Sector 48-49:

- construction related to transportation, such as highway and street construction are now classified in Sector 23, Construction;
- manufacturing equipment for the transportation of passengers and cargo by land, air, and water are now classified in Subsector 336, Transportation Equipment Manufacturing;
- renting passenger cars without drivers are now classified in Subsector 532, Rental and Leasing Services;
- ambulance services are now classified in Sector 62, Health Care and Social Assistance.

Future Activities and Issues

The complete sector descriptions for Sector 48-49, Transportation and Warehousing have been agreed to by the three countries and will be posted to the BTS web page once final editorial revisions have been made. Details such as index items will be published in the NAICS United States Manual in December 1997. Concordance tables illustrating the relationship the 1987 SIC to NAICS industries were published in the Federal Register notice of April 9, 1997. These tables are being further revised and will be posted to the Bureau of the Census home page once completed.

As announced in the Federal Register notice of July 26, 1994, the ECPC has been additionally charged with reviewing the existing product code classifications and product groupings. As a result of this examination, it was recognized that a demand based grouping of economic data may be more useful than a grouping by production based concept. The ECPC committed to a program that would provide improved data for purposes that require market-oriented groupings. The first part of this commitment resulted in the list of commodities and services being expanded for the 1997 Economic Census. The relationship of this list with the Standard Classification of Transported Goods remains to be developed.

STANDARD CLASSIFICATION OF TRANSPORTED GOODS (SCTG)

The Standard Classification of Transported Goods (SCTG) is the commodity classification system developed for data collecting and reporting the results of a Commodity Flow Survey (CFS). The SCTG is currently being used in the 1997 CFS. The SCTG was developed by the U.S. Department of Transportation's (DOT) Bureau of Transportation Statistics (BTS), and the Bureau of the Census, in cooperation with Statistics Canada. The classification system was created to address statistical needs the U.S. and Canada share in common, and to meet the individual needs of each country in regard to products transported.

The Department of Transportation (DOT), other federal agencies, and state and local governments share a need for detailed information on the flow of goods in the nation's transportation system, by origin, destination, distance traveled, tonnage, value, kind of commodity, and mode. These data are required to quantify the demands placed on the transportation system as a whole, on individual modes, and on individual corridors, by the movement of freight; to measure the economic impact of transportation; to analyze and forecast the structure and growth of regional and local economies; and for a diverse range of other analytical applications. The Bureau of the Census, with assistance from the DOT Bureau of Transportation Statistics (BTS), conducts the Commodity Flow Survey (CFS) for the purpose of obtaining data of the kind described above. The 1993 CFS was the first such survey since 1977, and the 1997 CFS is being conducted now.

Background

In the past, commodity flow data have been collected and reported using product classifications found in the Standard Transportation Commodity Classification (STCC). These classifications were developed in the early 1960s and have historically been maintained by the Association of American Railroads (AAR) to analyze commodity movements by rail only. The original purpose of the STCC was for identification of commodities for purposes of assigning rates for ICC-regulated rail carriers. The STCC continues to be used by the AAR as a tariff mechanism.

At the time that the Commodity Transportation Survey (the CTS--the predecessor of the CFS) was first conducted in 1963, STCC codes were still useful for analyzing most important aspects of the U.S. transportation system. Since then, many changes have taken place that have gradually made the STCC code less useful for tracking domestic product movements across all modes (although it remains perfectly functional for tracking rail-only movements). These changes include the de-regulation of trucking, the enactment of North American Free Trade Agreement (NAFTA), changes in logistics practices, the emergence of plastics and composite materials to replace metals and glass, the obsolescence of many categories of wood products, and the very rapid recent development of high-tech electronic goods. Because the CFS is a shipper survey, the CFS collects information about shipments moving on all modes. As a consequence, STCC classifications frequently provided inadequate detail for

identifying products that are significant for modes such as truck and air. It was against this background that the BTS sponsored the development of a new product code to collect and report CFS data.

Additional issues that made the STCC less useful include:

- The STCC did not clearly link to other systems of commodity classification.
- Historically, the STCC was based on an adaptation of the product detail for the 1957 U.S. Standard Industrial Classification (SIC), but had not been updated to reflect changes in the SIC.
- The STCC did not provide adequate documentation to facilitate the coding of hard-to-classify goods.
- The STCC had an enormous number of codes at the 5-digit level, which was the collection level for the 1993 CFS, making it cumbersome to use and potentially confusing for respondents.

Statistics Canada, the main statistical agency of the Canadian government, also recognized the need for a new commodity classification for transportation. Statistics Canada had been reporting their freight transportation data for different modes based on three different classification systems, and wanted to create a standard code for all modes.

In response to this jointly perceived need for a new commodity classification system, on the part of agencies of both the Canadian and U.S. governments, it was decided to create a common transportation commodity classification standard for the two countries. This has the added benefit of greater comparability of data between the two countries.

The SCTG was developed by a team of analysts from the U.S. Department of Transportation's Volpe National Transportation Systems Center and the Standards and Transportation Divisions of Statistics Canada. Staff at the U.S. Bureau of the Census and the U.S. Bureau of Economic Analysis also provided very valuable support and guidance to the product classification team. Participants at a July 1995 Conference at the Volpe Center also helped shape the direction of future activities for the new code.

The specific goals that the SCTG had been designed to address include:

- Improvement of the product categories used for collecting and reporting U.S. CFS data;
- Creation of integrated product categories for reporting Canadian marine, truck, and rail freight data; and
- Capability to directly compare Canadian and U.S. freight movement data.

Features Used to Create the SCTG

The SCTG has the following features:

- Useful for Multimodal Analysis. Product classifications in the SCTG reflect the movement of goods by all modes rather than a single mode, the Standard Transportation Commodity Classification (STCC) emphasized goods moved by regulated rail only. The goods most important to each mode of freight transportation have been included, with importance measured by the characteristics of weight, value, and shipment distance.
- Statistical Significance of Product Classifications. Product classifications at the SCTG's five-digit level were designed to create statistically significant categories for transportation analysis. Significance is measured by using the product shipment characteristics of weight, value, and shipment distance. It is hoped that this characteristic of the SCTG will lead to the eventual publication of national-level Commodity Flow data at the SCTG's five-digit level.
- Reduced Respondent Burden. The SCTG has fewer than half the five-digit codes that the STCC has at the five-digit collection level (499 as compared to 1,200). As a result, the burden to respondents of using the SCTG should be significantly less than the burden of using five-digit STCC codes.
- Comparability of CFS Data to U.S. Imports Data. Domestic imports data are collected using a ten-digit product classification that is an extension of the Harmonized System (HS). (The Harmonized Commodity Description Coding System (HS) used by the World Customs Organization provided a standard in defining the SCTG categories.) Because the SCTG and the U.S. import codes are both based on the HS, linkages between U.S. imports data and CFS data collected using the SCTG should be of very high quality.
- Comparability of 4-digit and 5-digit SCTG to NAICS. Most 4-digit and 5-digit SCTG categories, with the exception of residuals, mainly contain the products of one 4-digit industry class in NAICS. This makes it possible to compare freight flow data with manufacturing data, payroll data, and other industry-based data.
- U.S.-Canadian Product Flow Comparability. Because the U.S. and Canada will each use the SCTG for analysis of domestic freight movements, international shipments between the U.S. and Canada will be directly comparable for the first time ever, and comparisons can be made regarding U.S.-Canadian freight mode-splits and other freight transport characteristics.
- Unification of Canadian Transportation Commodity Classification. Because the SCTG can be used by all Canadian modes to report data, it will unify the reporting of Canadian freight transportation data and will make it possible to compare Canadian freight transportation data intermodally.
- Transportation-oriented system. The classification system is transportation-oriented, in the sense that groupings reflect transportation criteria such as common origins and destinations, common modes of transportation, and special features such as perishability, toxicity, high value, etc.
- The universe of transported goods is covered. Even if a particular commodity is not specifically listed in the classification, there is a logical place for it. Residual

categories have been created, if where needed, to cover all possible goods transported.

- Adaptable to future data needs. The system is easily adaptable to future data needs through judicious use of residuals. In an age of rapid technological change, the product mix that is transported will change both qualitatively and quantitatively in a relatively short time, and the classification system has been designed such that changes can be made at the lowest level of the hierarchy as an when required, to represent the universe of transported goods better. This flexible product classification will thus have a longer useful life than an inflexible classification.
- The system is supported by sufficient and clear documentation to facilitate the correct classification of all products.

SCTG Structure

The SCTG development team defined the SCTG categories based on the Harmonized Commodity Description and Coding System (HS) used by the World Customs Organization. (In some cases, at all but the highest level of the hierarchy, the HS did not provide sufficient detail and the Standard Classification of Goods (SCG), the Canadian extension of the HS, had to be used to account for splits of 6-digit HS codes between two or more SCTG codes. See below for more information.) Also, industry-of-origin distinction was used wherever the HS or the SCG building blocks provided the flexibility to do it. Use of an HS basis provided the benefit of comparability of domestic freight transportation data with international trade data, which are collected by Customs organizations on an HS basis. The following description of the SCTG is adapted from a publication of the Standards Division of Statistics Canada, (Statistics Canada, Ottawa, October 1996).

The SCTG is organized in a four level hierarchy.

- The first, or two-digit, level of the SCTG, consists of 41 product classifications. These categories have been designed to conform to industry of origin wherever possible.
- The second, or three-digit, level of the SCTG consists of 132 categories (125 HS-based categories and 7 SCG based details). Categories specified at this level consist of commodities or commodity groups for which very significant product movement groups have been recorded in both the United States (U.S.) and Canada. The seven SCG based categories are SCTG 171, 172, 180, 191, 192, 411 and 412. SCTG 171 through 192 are refined petroleum product categories, for which the HS does not provide a sufficient number of sub-groupings under HS 27.10 for analytical purposes. SCTG 411 and 412 are non-food waste product categories, which the HS do not distinguish in all cases.
- The third, or four-digit, level of the SCTG consists of 283 HS or SCG-based categories. These categories were designed to provide data for domestic freight transportation analyses. Four-digit categories may be of major data significance to either the United States or Canada, but not necessarily to both countries. It has

also been designed to reflect industry-of-origin and transportation characteristics that are not necessarily provided for in the HS.

- The fourth, or five-digit, level of the SCTG consists of 499 HS or SCG based categories. It is designed to provide categories for collecting (and potentially reporting) freight movement data. Five-digit categories are of relevance but not major data significance to either the U.S. or Canada. Product codes at the five-digit level have been designed to create statistically significant categories for transportation.

Future Activities and Issues

The Census Bureau is now developing a link between the Standard Classification of Transported Goods (SCTG) and the Standard Transportation Commodity Classification (STCC) using the SIC as a bridging mechanism. This will allow for the statistical data reported in the 1993 Commodity Flow Survey (CFS) to be republished using the new SCTG, to better meet data needs of the transportation community. The 1997 CFS will also be reported using the SCTG codes. The concordance between the two classification systems will be posted once it has been completed.

STANDARD OCCUPATIONAL CLASSIFICATION REVISION (SOC)

The Standard Occupational Classification (SOC) is a mechanism for cross referencing and aggregating occupation related data by social and economic statistical reporting programs. It is designed to maximize the analytical utility of statistics on labor force, employment income and other occupational data collected for a variety of purposes by various agencies of the United States Government, state agencies, professional associations, labor unions and private parties.

The transportation community is interested in the SOC revision process because there are two major transportation data programs that collect information based on it: the Decennial Census tracks journey to work flows according to several variables including occupation, and; the American Travel Survey collects information on long distance trip making characteristics, one of which is occupation.

Additionally, the ability to examine transportation patterns according to occupational classifications is an important part of policy making at all levels of government, such as transportation investment, planning (e.g., coding survey instruments and reporting data), and to research knotty questions such as the extent of private trucking activity in the United States (whereby a large percentage of activity goes unreported since it is captive to industries in the production of goods other than transportation).

The Office of Management and Budget (OMB) charged the Bureau of Labor Statistics (through the SOC Revision Policy Committee-SOCRPC) to revise the 1980 SOC in order to reflect technological and workforce changes that have taken place since 1980. OMB has further encouraged the use of the revised SOC by all federal agencies collecting occupational related data. The revised SOC will provide the standard for which this data will be collected and tabulated.

Background

The existing Standard Occupational Classification (SOC) Manual was last revised in 1980. A revision to this system was sought due to the many technological and workplace changes that have taken place since this time. All Federal agencies that collect occupational data will use the new system. Additionally, all state and local government agencies are strongly encouraged to use the revised national system to promote a common language for describing the world of work. In the past, Federal agencies were not consistent in their use of the SOC, and had adopted their own occupational classification systems.

The revised SOC is intended to:

- Replace the Occupational Employment Statistics (OES) occupational classification system used by BLS for gathering occupational information from private sector establishments;

- Replace the Bureau of Census' 1990 occupational classification system which will be used for the 2000 Census; and
- Serve as the framework for information being gathered through the Department of Labor's Occupational Information Network (O*Net) which is replacing the Dictionary of Occupational Titles (DOT).

Criteria Used to Revise the SOC

The following conceptual frameworks and existing occupational classification systems were considered during the SOC revision process:

Conceptual frameworks considered:

- Type of Work Performed. The revised SOC should incorporate all types of occupations in which work is performed, whether for profit or pay and classification should be based on work performed, skills, education, training, licensing and credentials. Occupations unique to volunteers should be excluded. Each occupation should be assigned to one group at the lowest level of the classification.
- Current occupational structure of the U.S. The framework should be flexible enough to accommodate new occupations as they emerge in the work force.
- Military occupations. To the extent possible, military occupations will be classified with their civilian occupation counterpart. For example, military and civilian workers are now included in 51-2011, Airline Pilots, Copilots, and Flight Engineers. This new treatment of military occupations is a general principle in the revised SOC. The twenty military occupations that do not have civilian counterparts are classified in the new major group Military Occupations.
- Existing occupational classification systems considered:
- Occupational classification systems such as the 1980 SOC, Dictionary of Occupational Titles, and the Occupational Employment Statistics (OES) .
- Skill-based systems such as Canada's National Occupational Classification (NOC) system which employs measures of skill level and skill type.
- Economic-based systems whereby groupings are arranged in homogeneous divisions based on substitutability using a demand approach or supply based approach.
- The International Standard Classification of Occupations (ISCO-88) dual framework based on the kind of work performed and level of skill involved.
- To the extent possible, the revised SOC will maintain linkage to existing and previously constructed systems.

The Federal Register notice of October 5, 1997 more fully describes the criteria used in revising the 1980 SOC and the major revisions proposed for the 1997 SOC.

SOC Structure

There are four levels of aggregation in the revised SOC: (1) major group; (2) minor group; (3) broad occupation; (4) detailed occupation. Each item in the SOC hierarchy is designated by a six-digit code.

Levels of Aggregation	Characteristics*	Example
Major Group	Two digit indicate major group - ends in "0000"	51-0000, Transportation and Material Moving Occupations
Minor Group**	Third digit indicates occupation - ends in "000"	51-2000, Air Transportation Workers
Broad Occupation	Ends in "0"	51-2010, Aircraft Pilots and Flight Engineers
Detailed Occupation	The last three digits indicate occupation	51-2011, Airline Pilots, Copilots, and Flight Engineers

* Residuals categories - Residual (All Other) Major Groups end with a "999", Minor Groups end with a "99", and detailed occupations end with a "9".

** Minor groups are divided into detailed occupations. Detailed occupations are occasionally aggregated into broad occupations, for purposes such as data collection or reporting, or to provide logical aggregates for detailed occupations.

The proposal at this time for Major Group-51-0000, Transportation and Material Moving Occupations, is as follows:

51-1000: Supervisors, Transportation and Material Moving
51-1001: Aircraft Cargo Handling Supervisors
51-1002: First-Line Supervisors/Managers of Helpers, Laborers, and Material Movers,Hand
51-1003: First-Line Supervisors/Managers of Transportation and Material-Moving Machine and Vehicle Operators
51-2000: Air Transportation Workers
51-2010: Aircraft Pilots and Flight Engineers
51-2011: Airline Pilots, Copilots, and Flight Engineers
51-2012: Commercial Pilots
51-2020: Air Traffic Controllers and Airfield Operations Specialists
51-2021: Air Traffic Controllers
51-2022: Airfield Operations Specialists
51-3000: Motor Vehicle Operators

51-3001: Ambulance Drivers and Attendants, Except Emergency Medical Technicians
51-3010: Bus Drivers
51-3011: Bus Drivers, Transit and Intercity
51-3012: Bus Drivers, School
51-3021: Driver/Sales Workers
51-3022: Taxi Drivers and Chauffeurs
51-3030: Truck Drivers
51-3031: Truck Drivers, Heavy and Tractor-Trailer
51-3032: Truck Drivers, Light/Delivery Services
51-3099: Motor Vehicle Operators, All Other
51-4000: Rail Transportation Workers
51-4010: Locomotive Engineers and Operators
51-4011: Locomotive Engineers
51-4012: Locomotive Firers
51-4013: Rail Yard Engineers, Dinkey Operators, and Hostlers
51-4021: Railroad Brake, Signal, and Switch Operators
51-4022: Railroad Conductors and Yardmasters
51-4023: Subway and Streetcar Operators
51-4099: Rail Transportation Workers, All Other
51-5000: Water Transportation Workers
51-5001: Bridge and Lock Tenders
51-5002: Sailors and Marine Oilers
51-5010: Ship and Boat Captains and Operators
51-5011: Captains, Mates and Pilots of Water Vessels
51-5012: Motorboat Operators
51-5021: Ship Engineers
51-6000: Other Transportation Workers
51-6001: Cleaners of Vehicles and Equipment
51-6002: Parking Lot Attendants
51-6003: Service Station Attendants
51-6004: Traffic Technicians
51-6005: Transportation Inspectors
51-6099: Transportation Workers, All Other
51-7000: Material Moving Workers
51-7001: Conveyor Operators and Tenders
51-7002: Crane and Tower Operators
51-7003: Elevator Operators
51-7010: Excavating, Dredge, and Loading Machine Operators
51-7011: Dredge Operators
51-7012: Excavating and Loading Machine and Dragline Operators
51-7013: Loading Machine Operators, Underground Mining
51-7021: Hoist and Winch Operator
51-7022: Industrial Truck and Tractor Operators
51-7023: Machine Feeders and Offbearers
51-7024: Packers and Packagers, Hand
51-7030: Pumping Station Operators

51-7031: Gas Compressor and Gas Pumping Station Operators
51-7032: Pump Operators, Except Wellhead Pumpers
51-7033: Wellhead Pumpers
51-7041: Refuse and Recyclable Material Collectors
51-7042: Shuttle Car Operators
51-7043: Tank Car and Truck Loaders
51-7044: Laborers and Freight, Stock and Material Movers, Hand
51-7099: Material-Moving Workers, All Other.

Future Activities and Issues

The initial Work Group deliberation process has been complete since December. SOCRPC must now incorporate comments from the Federal Register notice of July 1997, regarding the proposed SOC manual's occupational units and aggregate group, and publishing final recommendations to OMB in the Federal Register. OMB will then publish final recommendations in the Federal Register, at which time SOCRPC will finalize definitions, development of associated titles, numbering systems, and cross lists to existing systems.

The process has resulted in some positive accomplishments:

- The definitions of the occupations were updated to reflect current technologies--for instance, electronic cab controls were added to the locomotive operators description.
- Some of the key aggregations were achieved. Rail workers were kept together.
- The level of detail remained. While some aggregations were made to satisfy Census, for instance, BTS managed to maintain a breakout to an appropriate level of detail. Thus, while truck drivers were aggregated, the distinctions between small trucks, large trucks and route drivers were kept.
- Several occupations were removed as not having applicability. Parking lot attendants are more service industry-related than transportation jobs.
- Material movers and transportation were divided which makes more sense from an industry perspective.

Because the SOC was not as drastically revised as initially anticipated, some obsolete classifications (such as locomotive firers) and imbalances among modes remain.

In the final analysis, time will reveal the SOC's strengths and weaknesses. This will be a function of how the economy and resultant career paths evolve--if people will be moving through their career path based on the transfer of similar skills to different industries (similar computer skills for instance), than maybe the skill based approach will have been more efficacious. However, if the representative career path is based on an sequence that is structured more by the industry one works in, than some other method will have proven to be more useful. Time will tell which is more reflective of society's trends.